CLAIMS

What is claimed is:

1.   A device for searching signal paths comprising:

a first stage configured to sort a plurality of signal energies into one of a plurality of ordered candidate signal lists associated with one of a plurality of antennas based on the strength of the plurality of signal energies; and

a second stage configured to sort the plurality of ordered candidate signal lists into a signal path list that is ordered based on the strength of the plurality of signal energies in the plurality of ordered candidate signal lists.

2.   The device, as set forth in claim 1, wherein the first stage comprises a heapsort algorithm.

3.   The device, as set forth in claim 2, wherein the heapsort algorithm comprises an "n" out of "N" heapsort algorithm.

4.   The device, as set forth in claim 3, wherein the "n" out of "N" heapsort algorithm comprises a heap creation process that creates a heap structure from the plurality of signal energies and a retire and promote process that creates each of the plurality of ordered candidate signal lists.

5.   The device, as set forth in claim 1, wherein the second stage comprises a sorting algorithm.

6.   The device, as set forth in claim 5, wherein the sorting algorithm comprises a two-level grouping algorithm.

7.   The device, as set forth in claim 6, wherein the two-level grouping algorithm comprises a lead signal sorting process that creates a lead signal list from the largest of the plurality of signal energies in each of the plurality of ordered candidate signal lists and a promotion and replacement process that replaces one of a plurality of lead signals that is placed into the signal path list with another of the plurality of signal energies from one of the plurality of ordered candidate signal lists.

8.   A base station comprising:

a plurality of radio frequency systems;

a baseband system coupled to the plurality of radio frequency systems and

having a reverse link searcher configured to:

order a plurality of signal energies into one of a plurality candidate

signal lists for each of the plurality of radio frequency systems

based on the strength of the plurality of signal energies; and

order the plurality of candidate signal lists into a signal path list based

on the strength of the plurality of signal energies in the plurality

of candidate signal lists.

9.   The base station, as set forth in claim 8, wherein the reverse link searcher comprises a hybrid device having a field programmable gate array and a digital signal processor.

10.   The base station, as set forth in claim 8, wherein the reverse link searcher comprises a digital signal processor.

11.   The base station, as set forth in claim 10, wherein the reverse link
5   searcher comprises a "n" out of "N" heapsort algorithm that is a software routine utilized by the digital signal processor to order the plurality of signal energies.

12.   The base station, as set forth in claim 10, wherein the reverse link searcher comprises a two-level grouping algorithm that is a software routine utilized
10   by the digital signal processor to order the plurality of candidate signal lists.

13.   A wireless communications system comprising:

at least one wireless unit;

at least one radio frequency system having a plurality of antennas adapted to
15   communicate with the at least one wireless unit; and

a baseband system having a processor and a reverse link searcher, the reverse link searcher comprising:

a first stage configured to sort a plurality of signal energies based on

the strength of each of the plurality of signal energies and create

20   one of a plurality of candidate signal lists having a plurality of

ordered candidate signal energies associated with one of the

plurality of antennas; and

a second stage configured to sort the plurality of candidate signal lists

into a path selection list based on the strength of each of the

25   plurality of candidate signal energies.

14. The system, as set forth in claim 13, wherein the at least one radio frequency system communicates with the at least one wireless unit via a code division multiple access system.

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15. The system, as set forth in claim 14, wherein the at least one radio frequency system comprises a structure on which the plurality of antennas reside.

16. The system, as set forth in claim 15, wherein the structure comprises a

10 tower.

17. The system, as set forth in claim 15, wherein the structure comprises a building.

15 18. The system, as set forth in claim 13, wherein the at least one wireless unit comprises at least one portable computer system.

19. The system, as set forth in claim 13, wherein the at least one wireless unit comprises a cellular telephone.

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20. The system, as set forth in claim 13, wherein the at least one wireless unit comprises a vehicle having at least one of a mobile telephone and a navigation system.

21.   A method of searching comprising:

sorting a plurality of signal energies into one of a plurality of ordered

candidate signal lists based on the strength of the plurality of signal

energies; and

5   sorting the plurality of ordered candidate signal lists into a signal path list that

is ordered based on the strength of the plurality of signal energies in the

plurality of ordered candidate signal lists.

22.   The method, as set forth in claim 21, comprising the act of providing

10 the path selection list to a processor for selecting a signal path for a connection with a

wireless unit.

23.   The method, as set forth in claim 21, wherein the sorting the plurality

of signal energies into the one of the plurality of candidate signal lists comprises

15 utilizing an "n" out of "N" heapsort algorithm.

24.   The method, as set forth in claim 21, wherein the sorting the plurality

of candidate signal energies into the path selection list comprises utilizing a two-level

grouping sorting algorithm.